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An analysis of the effects of a summer remediation and counseling sequence on nonadmissible applicants' goal attainment at a regional community college in western Massachusetts.

John Joseph Shea

University of Massachusetts Amherst

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AN ANALYSIS OF THE EFFECTS OF A SUMMER REMEDIATION AND
COUNSELING SEQUENCE ON NON-ADMISSIBLE APPLICANTS'
GOAL ATTAINMENT AT A REGIONAL COMMUNITY
COLLEGE IN WESTERN MASSACHUSETTS
AMHERST MASS

A Dissertation Presented

By

JOHN JOSEPH SHEA

Submitted to the Graduate School of the
University of Massachusetts in
partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

January, 1967

Major Subject: Guidance and Counseling

AN ANALYSIS OF THE EFFECTS OF A SUMMER REMEDIATION AND
COUNSELING SEQUENCE ON NON-ADMISSIBLE APPLICANTS'
GOAL ATTAINMENT AT A REGIONAL COMMUNITY
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A Dissertation

By

JOHN JOSEPH SHEA

Approved as to style and content by:

Ralph P. Ford
(Chairman of Committee)

Albert S. Anthony
(Member)

Albert W. Parsons
(Dean, School of Education)

William Komegay
(Member)

January, 1967

ACKNOWLEDGMENTS

The writer is grateful for the help and encouragement he has received throughout this study. A special acknowledgment is accorded to Dr. Ralph R. Pippert, chairman of the thesis committee, whose faith in my ability made the opportunity for advanced study a reality. To Drs. Albert Anthony and William Kornegay, the other members of the thesis committee, a special word of appreciation for their encouragement in this project.

I am deeply indebted to Dr. Lewis O. Turner, President of the Greenfield Community College, Greenfield, Massachusetts. He freely committed his expert knowledge and the facilities of his institution to this investigation. Without his aid, this study could not have been completed.

This project was supported by a grant from the U.S. Department of Health, Education, and Welfare, Office of Education, Bureau of Research, Division of Adult and Vocational Research. To that institution and its representative, Dr. Virginia Thomas (currently Professor of Education at Iowa State University), a word of thanks.

To my wife, Irene, and my children, Daniel and Kathryn, I acknowledge their love and devotion. Without these, it would have been fruitless to pursue any goal.

John J. Shea

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CHAPTER I

INTRODUCTION

Today the public junior college is the most rapidly expanding segment on the American educational scene. Various commentators have observed that the growth of the junior college in the decades to come will parallel that which was attendant to the public high school in the most recent past decade. As per capita high school graduates increase, greater demands will be put upon our society to make available more education to more people. As the high school diploma becomes increasingly devalued as a commodity of personal accomplishment, the two-year collegiate diploma will assume an increased value in this same marketplace. Mass education is a product of our American society. It is here to stay. Like the public secondary school has done in the past decade, public higher education will in the future tend to become more inclusive, more comprehensive, more a servant than a master.

As public demand increases, the institutions of learning will need to respond by broadening the scope of their services to include all who want to try. The public junior college, in this scheme, will be responding to increased pressure to adhere to open enrollment policies.

The study herein reported is directed toward a partial resolution of this vexing problem. This investigation is an attempt to determine a method by which the public junior college may include students presently unable to matriculate because of predicted low academic success.

An Analysis of the Related Research

In this section it is the author's intent to review the professional literature as it is related to the need for the research herein reported. Because this thesis is most directly concerned with problems inherent to the public junior college, the literature reviewed will be that which will identify the purpose and scope of that institution. This review will include these topics: a brief description of institutional development, institutional characteristics, and selected enrolled student characteristics. Further, literature will be cited which indicates the need for remediation and counseling in the public junior college. It is hoped that, in this manner, a rationale may be developed upon which to base this investigation.

The Purpose and Scope of the Public Junior College

The public junior college is a uniquely American institution. There are, basically, two types of junior colleges: private and public. This investigation is concerned

with the latter. It may have, however, implication for both. The organizational difference between these two institutions is essentially that which exists between public and private four-year collegiate institutions: the public junior college receives most of its financial support from public funds and is subject to the control of a publicly elected and/or appointed board of directors, whereas the private junior college is endowed from the private sector and is subject to the control of a self-perpetuating board of directors.

Although the public junior college development can be traced from the turn of the century (c. 1900) (1: 1-11), the rapid increase in the number of institutions can be seen in more dramatic relief during the most recent three decades. From the period beginning in 1939 to the present, "the total degree credit enrollment increased by 250 percent in 2-year colleges and by 177 percent in 4-year institutions" (2: iii-iv). There was reported to be a total of 633 junior colleges enrolling 816,000 students in 1959 (1: 10). Two-thirds of all students in the United States enrolled in organized occupational curricula, an estimated 167,000 individuals, are serviced by the junior college (2: iii). In 1964 there were approximately "425 public junior colleges in operation in the United States, and new ones [were] starting at the rate of 20 to 25 per year" (3: 18).

In the Commonwealth of Massachusetts, the location of this study, there has been created within the past five years a Regional Community College System inclusive of nine, two-year public junior colleges. By the mid-1970's it is projected that three more of these institutions will have been created. These twelve schools will enroll approximately 18,000 to 20,000 students when they reach their projected peak capacity by 1975.

Characteristically, the public junior college is seen as a "transitional institution. Its courses of study have the qualities of both secondary and higher education" (4: 142-144). As Clark (5: 175-176) points out, the institutional image tends to be derived from the students it chooses, or is mandated, to serve. Because this institution is less autonomous from the community that it serves than is true of most senior, or four-year, colleges, it offers a more diverse curriculum in response to local demand. Most, if not all, public junior colleges have a liberal arts, or "transfer," program whose intent it is to prepare community students for eventual matriculation to a senior institution. A major emphasis in the public junior college curricula is the terminal courses that "identify the junior college with essential local concerns, particularly local industries and homely pursuits" (5: Preface viii). Although many scholars have made an effort to

describe traits which would characterize the unique qualities of the public junior college, Field's analysis (6: 63-95) would seem to be most cogent for the present purpose. He reports that the institution is fundamentally

- (1) Democratic - low tuition and other costs; nonselective admissions policies; geographically and socially accessible; and popularized education for the largest number of people.
- (2) Comprehensive - a wide range of students with widely varying abilities, aptitudes, and interests; a comprehensive curriculum to meet the broad needs of such students.
- (3) Community centered - locally supported and controlled; local resources used for educational purposes; a community service improving the general level of the community.
- (4) Dedication to life-long education - educational programs for individuals of all ages and educational needs.
- (5) Adaptable - to individual differences among students, differences in the communities, and the changing needs of society.

Even though one can reasonably but affirm Medsker's conclusion that "there is no stereotyped student body in the two-year college" (7: 49-50), it would seem appropriate at this time to discuss some of the conditions and/or traits which differentiate this student group from the more familiar senior college student. Seashore's investigation (8: 74-80) of academic ability as it relates to the junior college student population would seem to indicate that entering freshmen score lower on an objective test of

academic aptitude than was true of freshmen entering a four-year institution. This conclusion has most recently been affirmed by Cooley and Becker (9: 464-469) using data collected in Project TALENT (10). Medsker, after a review of the research studies completed in this area, reports the following as concerns the level of academic aptitude among junior college students (7: 30):

Some contend that only the less able students attend junior college and that it is a college of last resort for the student who cannot be admitted elsewhere. Others have stated the corollary that four-year college students are intellectually superior to junior college students, and the implication has been that all four-year college students are superior to all two-year college students. Neither contention is correct.

The available facts indicate that the average academic aptitude level of students entering two-year colleges is somewhat below that of those who enter four-year colleges. However, there is a wide range of abilities among two-year college students. . . .

When considering cultural influences as they may have an impact on the students, Medsker concludes (7: 41) that "the public junior colleges, being primarily local and inexpensive to attend, draw heavily from the lower half of the socioeconomic distribution." The Cooley and Becker analysis lends further substance to this statement. These investigators go further to suggest that the junior college student "appears to be more like the college student in terms of socioeconomic factors" (9: 464). A study by D'Amico and Prah1, reviewed by Blocker et al. (11: 120-121), indicates that 70 percent of those polled in their

survey chose the junior college because it was "cheaper than going away." It would appear that the public junior college student is more likely to come from the lower socioeconomic segment of our society. This is less and less a differentiating factor in junior-senior college student body comparisons because, as the Cooley and Becker study (9) would imply, the four-year institution is becoming increasingly accessible to these students. This change is probably due to the increasing availability of the various forms of public and private financial support for the four-year student without a parallel increase in this area at the junior college level.

In addition to the academic aptitude and the socioeconomic variables, other characteristics seem to differentiate the junior college from the senior college enrollee. Those selected for inclusion in this summary, in addition to the foregoing, are age, sex, and reason for going to college. Objective evidence in these areas is sparse due to a lack of substantive research.

The Blocker et al. (11: 107-108) review of the age variable summarizes that the "two-year colleges serve two distinct populations. The first is in the seventeen-twenty-one age group, loosely classified as college-age youth." The second are adult students ranging in age from twenty to sixty or seventy. It is reliably estimated that the latter

group, mostly part-time or unclassified students, constitute 50 percent of the total junior college enrollment (12: 84-97). The present study will be concerned exclusively with the first group: college-age youth.

The ratio of male to female enrollment at the junior college differs considerably from that of the senior college. Whereas the senior college, especially the public institutions, generally equalizes its enrollment near the 50:50 ratio, studies reported by Medsker (7: 45-46) and Thornton (13: 151) estimate that the junior college male-female enrollment ratio is nearer to three men to each woman enrolled. This phenomenon is possibly due to the terminal-vocational nature of the two-year institution. The public junior college wherein this study was conducted has an approximate 3:1 ratio in favor of the male enrollees.

Probably the most significantly different comparison between junior college and senior college students is their respective educational goal orientation/realization. It would seem to be a reasonable assumption that the greatest majority of senior college matriculants are intent upon completing a four-year sequence leading to a bachelor's degree. It is estimated that, four years later, about one-half of these students realize that goal (14: 88). Even though, as Thornton points out in contrast to the above (13: 152-154), "most students enter the junior college with the

intention of transferring to a four-year college in pursuit of a bachelor's degree . . . only a minority of the entrants actually do transfer." Clark's estimate, placing two-thirds of an entering freshman class in this "transfer goal" category, is more conservative. Medsker's research (7: 134-135), including the populations of sixty-three junior colleges ($n = 17,627$), concludes that only 33 percent of those enrolled actually matriculated two years later to a senior institution. One could summarize, then, that, unlike the senior college situation wherein over a four-year period 50 percent realize their assumed goal, at the junior college an estimated two-thirds of the entering freshman class in a two-year time span fail at the same assumed goal.

The Need for Remediation and Counseling in the Public Junior College

A study of the professional literature has revealed that research concerned with the effects of remediation and counseling at the junior college level with any subpopulation sample is sparse. Few studies have been uncovered that deal specifically with the subpopulation sample herein under consideration. There is some recent indication (15: 22-27) that such studies are currently under way; but, at this writing, no results have appeared in published form. With these preconditions in mind, this section will contain

a review of (1) the literature that cites the need for remediation and counseling as an aid to the population herein selected for study and (2) analogous research studies.

A recent survey by Schenz (15: 22-27) of junior college administrators revealed that "even though ninety-one percent of the junior colleges admit [low predicted ability] students, only twenty percent have designed courses and curriculum for them." The report further indicates that "more than fifteen percent of their full-time students are students with low ability." Seventy percent of the institutions responding (N = 151 public junior colleges) reported that some variety of counseling service was available to these students. Schenz concludes:

1. The remedial function is accepted by the administrators of junior colleges as a legitimate function of these institutions.
2. Administrators of junior colleges accept the responsibility of providing courses and curriculums to meet the needs of students with low ability.
3. Emerging throughout the nation is an awareness . . . of the problem of meeting the needs of students with low ability.

Blocker, Plummer, and Richardson (11: 240-241)

summarize that, because of the unique characteristics of the junior college population (less academically able, from lower socioeconomic backgrounds, and more immediately faced with vocational choice), their students need "remedial courses, assistance in developing favorable study habits,

counseling to modify unrealistic vocational aspirations, and aid in adjusting to the emotional consequences of failing to achieve desired goals."

Reynolds (16: 19) supports remediation in mathematics and communication skills:

Many students are graduated from high schools deficient in reading skills, in oral and written expression, and in basic mathematical skills. . . . Remedial courses often enable students to overcome these weaknesses and thus successfully to complete college careers.

Johnson's study of general education in the junior colleges of the State of California (17: 70-77) supports the need for remediation and counseling.

Hillway (18: 159), in assigning primary responsibility for remediation to the student personnel services, indicates that "students with curable personal defects - difficulties in reading, speech, and the like - should receive special attention and help in overcoming them."

Richardson and Elsner (19: 18-21) report that the marginal (low ability) student problem "is particularly acute in urban areas where poverty and de facto segregation generate discouraging numbers of educationally disadvantaged students." After declaiming the "fragmented remedial approach" prevailing in many two-year colleges, the authors go on to suggest an intensive remedial program that would have the following goals:

1. Meeting the needs of students in the lower range of the ability spectrum.

2. Improving standards in transfer courses by removing students incapable of making a contribution or of achieving significant benefit.
3. Providing educationally disadvantaged students with intensive counseling on an individual and group basis to:
 - a. minimize emotional factors inhibiting success;
 - b. aid students to assess realistically their potential and to relate this to vocational goals; and
 - c. identify students incapable of benefiting from any college program and refer them to [other] community resources. . . .
4. Salvaging the academically able students from this group who might be upgraded to the point where they could be successful in regular technical or transfer programs.

Clark (5: 70-77), in his treatise on the "open door" admissions policy that he feels is incumbent upon the public junior college, expresses the need for remediation and counseling as a necessary adjunct to pursuing that policy. He further concludes that the remediation and counseling function can play an indispensable role in the "cooling-out process." It is his contention that the latent terminal student (those who unrealistically initially choose a course of study whose demands exceed their demonstrated potential to perform) should be the subject of an intensive program in which they can, through counseling and, particularly, through counseling which would acquaint them with the vocational choice spectrum, reassess their educational/personal

goals. By making available, as a matter of policy, a remedial course, the student's potential to achieve his stated goals can be more thoroughly and realistically assessed by instructors in the remedial areas.

Leland Medsker best summarizes the need for remediation and counseling in the following passage from his work, The Junior College: Progress and Prospect (7: 66-67):

To become selective might make the job of the public junior college easier, but it would raise questions of social policy. There is, for example, a question whether in the foreseeable future any lessening of effort in the salvaging of youthful talent is desirable. A system that encourages and assists students to avoid a premature termination of education has the result that many of them will later fill highly necessary and useful posts at a time when trained manpower may be badly needed. This would suggest that some type of institution should exist giving high school graduates with certain deficiencies an opportunity to remedy them and prove themselves capable of college work.

.....
 Certainly, the two-year college should not be considered an antidote for any failure on the part of the American high school. As the high school has come to be comprehensive in nature, serving practically all children of all the people, it has, like the two-year college, encountered difficulties in providing appropriate programs and instructional techniques for its diversified student body. . . . The high school can no more pass on to the junior college the obligation to correct the deficiencies of its graduates than the junior college can expect the four-year college to do for transfer students what should have been done in junior college.

On the other hand, some students inevitably need special help upon entering junior college. Some do not decide on college early enough in high school to meet requirements. Others become motivated too late. Still others have low aptitude and achievement levels. What agency is to assist them? To date the American tradition is on the side of providing some type of opportunity after high school to most students desiring it and

of making performance the method of screening. Under these circumstances the junior college must make such opportunity available, or some other type of institution must be created for the purpose.

Analogous Research Studies

This research is predicated on the belief that the public junior college has, as Medsker terms it, a "salvage function" (20: 22). McConnell's views (21: 122) reenforce this:

The ambiguity of the role of the unselective junior college is inherent in its service as a comprehensive institution. In the hierarchical system of higher education, it protects every student's "right to try." . . . It is in effect a great distributive center, selecting after admission the students capable of succeeding in four-year colleges and giving them an academic regimen, and encouraging as many of them as might profit from it to shift into an occupational curriculum.

This study is designed to evaluate the success potential of the student-participants at a two-year public junior college after it has been determined by using the traditional barometers of collegiate success (objective scholastic aptitude test scores, high school performance records, etc.) that these students should not be successful. The remediation and counseling variables were introduced prior to the subjects' entering the junior college during an intensive summer program. The value of the battery of tests is to exclude from this investigation, except as may happen by chance, subjects whose prediction for academic success would be positive.

It is important to understand that it is not a primary intent here to evaluate the value of actuarial predictors of collegiate success presently in use by admissions personnel. Their relative effectiveness in this respect has been the subject of extensive and ever-increasing concern to the academic community (22, 23, 24, 25).

The present investigation will be limited to evaluating the effect that the remediation-counseling variable had on promoting success with the selected student population sample. Similarly, the following research studies selected for inclusion in this section will be those whose intent it has been to examine similar problems.

Childers at the University of Georgia (26: 929-933) reports "experience has shown that [selective admissions] procedures fail to distinguish between those who can succeed in college and those who cannot succeed with as high a degree of validity as is desired." As a result, his institution created a "Summer On Trial" Program. In order to qualify, an enrollee had to have a predicted grade point average (based on a University of Georgia regression prediction formula using high school quality point average and Scholastic Aptitude Test scores as variables) of D-plus.

During the summer quarter the S.O.T. students [carried] a normal academic load of 15 quarter hours. The course work taken must have been pertinent to the applicant's proposed program of studies and [could not] include skill courses.

In a follow-up study of the success met by the S.O.T. subjects, the investigator reached these conclusions:

1. Sex had no relationship to the eventual success-no success status of the S.O.T. subjects.
2. At the end of two terms of attendance during the academic year, it was found that 20 percent of those initially admitted to the 1962 S.O.T. Program were in good standing as compared with 10 percent for each of the two previous years.

The author in a discussion of these comparative results indicates that they are

. . . suggestive of the potential value of the S.O.T. Program. This difference in terms of percentage is roughly comparable to the percentage of false negatives who would never have attended the University had the S.O.T. Program not been available.

In this investigation, a remedial sequence inclusive only of skill subjects and personal-vocational counseling will be offered in an attempt to increase the success potential of the subjects over that which was reported by Childers.

An evening remedial program was instituted by Meister, Tauber, and Silverman at a New York City Community College (27: 78-88). Its curriculum included remedial reading and mathematics. It enrolled only part-time students who were intent upon meeting entrance requirements for full-time student status. No special counseling was reported as being available. The authors concluded that the program was beneficial but, because many variables were

not controllable due to the transient nature of the group under study, more objective conclusions were not available.

A longitudinal study, conducted by Campbell (28: 59-68) at the Henry Ford Community College in Detroit from 1956 to 1961, indicates that, of 291 on-trial (low predicted ability) students admitted in 1956, thirty-three, or 11 percent, graduated from the institution. No special remedial program or counseling was available to these students. It was the author's conclusions that:

1. The Henry Ford Community College is not meeting the needs of the on-trial student body.
2. The above is true because of "inadequate student motivation, unrealistic goals of students, faculty attitude toward the program, and a lack of an adequate academic program for the trial admission student."
3. With "more intensive counseling as well as academic advising, a greater share of these students might have performed better academically.
4. "Principal's recommendation, the college test scores, and the high school honor point averages may not be significant factors in predicting success in college for trial admissions students."

Miller (29) in a study of 400 entering freshmen at Wayne State University, in which no special remediation and/or counseling was reported, grouped students equally into the following four "Recommendation for College" categories:

1. One hundred, who were recommended by their high school principal, possessed the proper high school academic average and were admitted without qualifications.

2. One hundred who were admitted upon recommendation of the principal but who were of questionable academic achievement.
3. One hundred who were admitted by examination and upon the recommendation of the high school principal.
4. One hundred who were admitted upon examination, but who were not recommended by their principal.

It was the investigator's conclusion that there exists considerable variation between the participants' high school and collegiate achievement records. The mean honor point average of these students was lower than that achieved by the group as high school students. Fourteen percent of those in Recommendation Category 1 failed as college students. Twenty-seven percent of those in Recommendation Category 2 did below "C" (2.0) work. Fifty percent in Recommendation Category 3 averaged "C" (2.0) or better. Fifty-eight percent of the group in Recommendation Category 4 did "C" (2.0) or better work.

In Powell's study (30), also at Wayne State, 477 trial-admission students were selected for remediation in Fundamentals of Expression, Quantitative Reasoning, and Current History after being refused entry into the regular degree-granting program. The instructional staff determined each candidate's potential for pursuing a degree program at Wayne State at the conclusion of the remedial program. Ninety-three percent of the enrollees, after the remedial sequence, were judged eligible to pursue a degree program.

One of the conclusions cited by the author was that trial admissions could be more fully developed in a community college system. In that manner those students would have a better opportunity to demonstrate their academic ability; and, if they did not prove successful, they could redirect their activities into a terminal program without the affective encumbrances of failure and expulsion from a university.

In a study conducted by Hendrix at the University of Wyoming (31: 185-188), "special advising" (counseling) was made available to an experimental group ($n = 20$) of entering freshmen. All had low predicted grades: 1.50 quality point predicted average. The study included a control group ($n = 60$). The author concluded:

The achievement of the experimental group with low predicted grade-averages who received special advising was significantly better than that of 60 freshmen students with low predicted grade-averages who were advised by regular faculty advisers. The better achievement of the experimental group was not attributable to disproportionate inclusion of less difficult courses in their schedules. The experiment provided no basis for judging which aspect, or aspects, of the advising pattern employed were responsible for the results obtained.

A Summary of Research Conclusions

As has been previously stated, few investigations have been found that bear direct relationship to the problem herein under consideration. Indeed, research concerned

with any area of the junior college is characterized by its paucity. In this section it has been the investigator's intent to cite the literature which authenticates institutional responsibility for low-predicted-ability students who may wish to continue their education past the secondary level. Clark (5), Fields (6), Medsker (7), and others substantiate a need for responsible action in this area. Schenz (15) concludes that a great majority of public junior college administrators accept this course of action. As his report later indicates, however, few institutions have formalized the process.

The Blocker, Plummer, and Richardson (11), Reynolds (16), Johnson (17), Hillway (18), and Richardson and Elsner (19) studies all indicate the need for including remediation and counseling in the junior college services offering. They indicate that these services are essential to the institution because of the unique characteristics (less academically able, from lower socioeconomic backgrounds, need for more immediate choice of a vocation) of its student body. Medsker (7) points out that the societal pressures which created the institution are forcing it to become more inclusive and comprehensive.

Of the studies reported above which attempt to include low-predicted-ability students in a regular degree program, none introduced the remediation/counseling variable

used in this investigation. Childers (26), using a similar low-predicted-ability sample, reported that 20 percent of the student-participants were successful without remediation and/or counseling. In a similarly designed study, Campbell's (28) "On-Trial" junior college, low-predicted-ability students, without the aid of remediation and/or counseling, had an 11 percent success rate. Miller's study (29) reports that approximately 7 percent of those students not recommended for acceptance into college by their high school principal were successful two-year degree candidates. The Powell research (30) states that, after remediation, 93 percent of the previously unacceptable matriculants to a public junior college were judged acceptable. She terminated her experiment at that point. No data are reported which would indicate the level of success that these students had in completing a degree program. The study results do, however, support the efficacy of the remediation variable used in this thesis. The research reported by Hendrix (31) introduced the counseling variable in an attempt to increase success of low-predicted-ability students in a degree program. He concludes that those who received "special advising" were significantly more successful in goal attainment than was true of the control group. In his study, no remediation variable was operant.

A Statement of the Problem

Many normally bright high school graduates are precluded from entering the public junior colleges of our nation each year because they have failed to obtain the requisite skills in reading, writing, and arithmetic during the preceding twelve years in the public school. That this is true is demonstrated each spring when public junior college admissions personnel turn away young men and women in the marginal demonstrated ability category. One plausible solution to this problem, it will be contended here, is an intensive summer remediation program in which these marginal students are exposed to a planned didactic and counseling experience designed to allow them to acquire knowledge in the skill areas needed for successful collegiate performance at a public junior college.

From a manpower point of view, the futures skill market could be brighter than is presently the case. It may well be possible to release more persons presently relegated to unskilled and/or semiskilled positions on the basis of their high school performance records. This research could give initial direction to public junior college admissions personnel in their efforts to establish criteria on which to base independent post-high school evaluation and/or prediction; i.e., criteria exclusive of high school

performance records.

The research herein reported will have as a sample population a unique group in several respects. (A more detailed description of the sample population is to be found in Chapter II.) The sample will represent students graduated from the public schools who: (1) received low high school performance indicators (grade-point-average, rank in class, teacher/counselor recommendations); (2) received low scores on a standardized, objective, college success predictor; and (3) because of (1) and/or (2) above, could not gain entrance to a public junior college under other than experimental conditions.

The intent of this research in less global terms is to determine the differential effect that a summer remediation/counseling program may have on collegiate goal attainment for the selected sample population. The goal, in this instance, is limited to the successful completion by the subjects of one full semester at a public junior college.

A feature of this study is that its design accommodates evaluation. This will make possible alteration in instructional content, counseling session content, and/or student selection criteria for future, similar summer programs. Additionally, the counseling variable can be evaluated in terms of its overall effectiveness on a short-term counselee exposure.

Objectives of This Research

It was the intent of this research to (1) determine if a planned remedial program would have a positive effect in preparing low-predicted-ability student-participants for successful completion of the first semester of a two-year terminal college degree program, and (2) determine if personal-vocational counseling has a positive effect in their achievement of the goal referred to in (1), above.

Limits of the Study

The research reported herein is limited to an analysis of the differentiating effects that a remedial summer sequence and short-term personal-vocational counseling may have on the goal-attainment (successful completion of one semester at a public junior college) of forty subjects enrolled at a Regional Community College in western Massachusetts during the summer of 1965 (and subsequent full semester). The analysis is restricted to an evaluation of academic performance as it may have been affected by the remediation and counseling variables. It is acknowledged that other variables (motivation, instruction, location, and institution) may effect success. Although every attempt was made to equalize these factors, no attempt here has been made to analyze their effects. That that may prove a

fruitful avenue of continuing interest and further research is acknowledged.

A statistical limit of this study is the absence of a control group against which comparisons could be made concerning the differentiating effect of the remediation variable. These limits were imposed by the Regional Community College because space was not available for an additional forty students. The absence of the control for the remediation variable is somewhat mitigated by the composition of the experimental group. In that the experimental group was composed entirely of nonadmissible students, a control group would not have had an equi-probable chance for success except as that might have occurred by chance.

Summary

In this chapter the author has reviewed the professional literature as it is related to this inquiry. The purpose and scope of the public junior college was outlined in terms of its institutional development, institutional characteristics, and selected enrolled student characteristics. Next, the need for remediation and counseling in the public junior college was cited. A further section was devoted to an explication of those research studies completed that were similar to that herein under consideration. A summary of research conclusions has been included.

In the final sections, the problem was stated along with the hypothesis to be sought in this study. The limits of the study are outlined.

In the subsequent chapters of this dissertation, the reader will find a description of the design of the experiment, an outline of the summer remedial sequence, a statistical analysis of the data collected in the research, and a discussion of the research findings.

Chapter II contains a description of the general design of this study.

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CHAPTER II

GENERAL DESIGN

A two-group, pre-test post-test design (1) was used to evaluate this experiment. The forty subjects were divided into two treatment groups of twenty on a random basis for the counseling procedure. Treatments were assigned in a random manner. Both treatment groups were administered the following battery of tests before either treatment was commenced:

The Iowa Test of Educational Development (ITED)

The Lorge-Thorndike Test of Intelligence (LT)

The Sequential Test of Educational Progress:

Listening (STEP-L)

The Davis Reading Test (DR)

The Strong Vocational Interest Blank (SVIB)

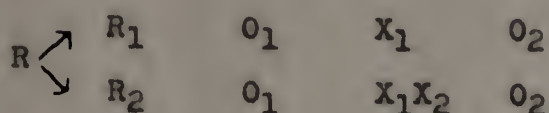
The Edwards Personal Preference Schedule (EPPS)

The Scholastic Aptitude Test of the College Entrance Examination Board (SAT)

One experimental group of subjects received the remediation treatment (X_1). The other group of subjects were the recipients of both remediation and personal-vocational counseling (X_1, X_2). At the termination of the experimental period, both the X_1 and X_1, X_2 groups were

administered the post-tests with the same battery as listed above, using alternate forms when they were available.

The research design of this study may be expressed symbolically in the following manner:



where...

- R indicates random selection,
- O_1 indicates the pre-test battery,
- X_1 indicates the remediation experimental group,
- X_1X_2 indicates the remediation-counseling experimental group, and
- O_2 indicates the post-test battery.

A one-semester follow-up study was conducted immediately following the summer sequence from September, 1965, through January, 1966, on both the X_1 and X_1X_2 experimental groups to determine the extent of their goal attainment during this previously stipulated period.

Population and Sample

The subjects selected for inclusion in this research were high school graduates from commercial, vocational, college preparatory, and general curricula. All those enrolled could be classified as having been graduated from high

schools located in rural/semirural New England communities. All participants had indicated a desire to continue their formal education in a terminal two-year public junior college. All enrollees had applied for admission at a Regional Community College in western Massachusetts. None of the subjects was accepted for matriculation at that institution. They were all refused admission because they failed to meet the minimal entrance criteria on such traditional collegiate success barometers as high school quality point average, rank in graduating class, Scholastic Aptitude Test scores, and teacher/counselor recommendations.

All of the subjects in this research were volunteers. They were guaranteed entrance into the freshman class, starting in September, 1965, as full-time, non-probationary students contingent only upon their being in reasonable daily attendance through the summer remediation-counseling sequence.

The subjects were initially identified by the Regional Community College admissions personnel and/or area high school guidance counselors.

Final assignment to the experimental program was determined by a screening committee composed of the President of the Regional Community College and this investigator.

Data and Instrumentation

There were three kinds of data collected in this

research. They were:

1. Objective pre- and post-test scores from the instruments described below:

a. The Iowa Test of Educational Development (Form A and B) was used to determine a base for individual remedial instruction, to evaluate students' accumulated academic knowledge and skills, and to provide pertinent information for counseling. All of the sub-tests were administered. A composite score was computed. The sub-tests included:

- (1) Background - Social Studies
- (2) Background - Natural Science
- (3) Correctness of Expression
- (4) Quantitative Thinking
- (5) Reading Comprehension - Social Studies
- (6) Reading Comprehension - Natural Science
- (7) Reading Comprehension - Literature
- (8) General Vocabulary
- (9) Use of Sources
- (10) Composite

b. The Lorge-Thorndike Test of Intelligence (Alternate forms--Level 5). This intelligence test was selected because:

- (1) It is basically a power test.

- (2) It yields both verbal and non-verbal scores.
 - (3) It is of sufficient length to measure an adequate sampling of measurable intelligence.
- c. The Sequential Test of Educational Progress: Listening (Alternate Forms--Level 2). The results of this test were especially helpful to the remedial English and reading instructors. It provided an evaluation of students' skills in this area for counseling purposes. The following skill areas were evaluated:
- (1) Comprehension.
 - (2) Interpretation.
 - (3) Evaluation and Application.
- d. The Davis Reading Test (Alternate Forms--Series 1). This test is designed to measure individual and group reading comprehension skills. The results were especially useful in remedial reading instruction but had implications for all the instructional areas. The test yielded two scores for each individual and the group:
- (1) Level of Comprehension.
 - (2) Speed.
- e. The Strong Vocational Interest Blank. This is an inventory of interest and preference intended to aid in predicting chances of success and

satisfaction in a variety of occupations. This inventory was especially valuable to the counsellor, but its information had motivational value for instruction. No alternate form was available. Separate forms were used for men and women.

- f. The Edwards Personal Preference Schedule (No Alternate Forms--Test-Re-Test). This test was used to determine the relative importance of fifteen key needs or motives for each individual. The results were especially useful in counseling but had implication for remedial instruction. Standard scores were reported for these need categories:
- (1) Achievement.
 - (2) Deference.
 - (3) Order.
 - (4) Dominance.
 - (5) Abasement.
 - (6) Nurturance.
 - (7) Exhibition.
 - (8) Autonomy.
 - (9) Affiliation.
 - (10) Intraception.
 - (11) Succorance.

- (12) Change.
- (13) Endurance.
- (14) Heterosexuality.
- (15) Aggression.

g. The Scholastic Aptitude Test of the College Entrance Examination Board (Alternate Forms).

This instrument was used to determine both student and group basic verbal and mathematical aptitudes. The test yielded the following scores:

- (1) Verbal aptitude.
- (2) Mathematical aptitude.

2. The Remedial Program Data. The summer remedial session, including courses in English, reading, and mathematics, was outlined as to content and expected instructional goals after the pre-test battery information became available--but before the experiment began--by the instructional personnel and the principal investigator. The principal investigator conferred from time to time throughout the summer with the instructional staff to determine that the proposed course of study was being followed and/or if changes from the original proposal were necessary. Any changes that may have occurred were recorded. Further, periodic classroom visitations were made

by the investigator to observe for pre-planned instructional content.

By following this procedure, it was possible to accurately describe the content of the remedial instruction in all subject areas.

3. The Personal-Vocational Counseling Data. The personal-vocational counseling process was recorded for each individual in the remediation-counseling (X_1, X_2) experimental group. The number of hours of counseling exposure for each participant-student was equal. The same counselor was used for all experimental group subjects.

The individual counseling sessions had as their central theme an interpretation of the appropriate objective test results (especially the Strong Vocational Interest Blank and the Iowa Test of Educational Development) by the counselor. It was the desired outcome of these sessions that the counselees make a choice in the selection of a terminal curriculum which would be both appropriate for them and compatible with the available test data.

The terminal courses offered at the Regional Community College are Business (general and accounting), Technical, Executive Secretarial, Nursing, Recreation Specialist, and General Studies.

The Analytic Model

The effects of this research were statistically determined in the following manner:

1. The analysis to determine whether or not the summer remedial program produced academic growth on the part of the subjects was accomplished through the use of a series of paired-t tests (2: 165-166). The computational formula for this statistic is:

$$t_p = \frac{\bar{d}}{s_d \sqrt{n}} \quad \dots \text{where} \quad \alpha = 0.05.$$

2. The analysis to determine whether or not the personal-vocational counseling had a differentiating effect on the academic growth of the remediation-counseling experimental group (X_1, X_2) after their involvement in the summer remedial program was accomplished through the use of a two-way analysis of variance (unequal sub-class) (3: 102-111) on the post-remediation test scores.
3. The following procedures were used to evaluate the differentiating effect that personal-vocational counseling may have had on the attainment of the success goal (successful completion of one semester at the Regional Community College) for the recipients (X_1, X_2) of that treatment.

- a. The First Semester Grade Point Average (GPA) was computed for each of the subjects.
- b. A t-test (4: 270) was computed between the means of the counseling-remediation group (X_1, X_2) and the remediation (X_1) group. The computational formula is:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sigma \sqrt{\frac{1}{N_1} + \frac{1}{N_2}}}$$

$$\text{where } \sigma = \sqrt{\frac{n_1 s_1^2 + n_2 s_2^2}{N_1 + N_2 - 2}}$$

and $\alpha = 0.05$.

Summary

This chapter has described the general design of this research. It includes a description of the sample population and, in the "Data and Instrumentation" section, a description of the test battery to be employed as well as the data collection procedure for the remediation and counseling variables. A final section relates the analytical model used in the evaluation of the hypothesis under consideration.

In Chapter III the reader will find a statement of goals and a curriculum outline for the summer remedial sequence.

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CHAPTER III

THE SUMMER REMEDIAL PROGRAM

The summer remedial program was conducted at a Regional Community College in western Massachusetts for the subjects enrolled in this experiment. It was in session for seven weeks during the months of July and August, 1965. The course offering included Remedial English, Remedial Reading, and Remedial Mathematics.

Organization

The staff included a coordinator/counselor (the principal investigator), an English teacher, a remedial reading instructor, and a mathematics teacher. The instructional staff had had a minimum of five years of teaching experience in their respective subject areas at the secondary level. All indicated an interest in this investigation and a desire to work with young people similar to those enrolled in this project.

A four-period, one hour each in duration, day was utilized throughout the summer. Three periods each day were used for instructional purposes. A fourth period was available to the subjects for library work, study, student-teacher conferral, and/or socializing.

Counseling sessions for the experimental group were held during a one and one-half hour time period immediately preceding the beginning of the school day.

A Statement of Instructional Goals

It was the intent of the remedial instruction that each individual enrolled would be free to be academically and, thereby, personally successful to the limit that their abilities would allow. It was felt that there was no need to heighten the failure aspect of the educational process for these young people. Instead, every effort was made by the staff to allow for academic success and positive reward. Pursuant to that end, the following working relationship was encouraged between the instructional staff and the students:

1. Small classes would be conducive to the kind of intensive instruction most appropriate for remedial teaching. A ratio of twelve students to one instructor was established.
2. Because of the small group size, instruction was individualized for each student. Instructors were in close contact with each student. They endeavored to know the nature and intensity of the learning difficulties encountered by each of the enrollees. It was in this manner that the remediation process

was paced by the instructor. A conscious effort was made to verbally reward student progress on a daily basis. Instruction proceeded at a rate that minimized failure.

3. No grades, marks, or other structural evaluation procedure was engaged in by the staff. Students had ample time available (one class hour and one conference hour each day) to evaluate their progress in all subject areas in direct communication with their instructors and their peers. No composite grade, mark, or other structural evaluation was considered necessary as a measure of student success or failure. This could be measured best in terms of whether or not the student was successful in the collegiate classroom. The intent of this procedure was to heighten for each student the concept that the best possible evaluation criteria would be his own self-satisfaction in acquiring skills and putting them to work toward the academic goal of his choice.

The Remedial Curricula

Below, an outline of the instructional content for each of the areas (English, Reading, Mathematics) attended to in the summer remedial sequence is recorded.

Instructional material used was of the variety that is readily available on the secondary school publishing market. Since much of the instruction was done on an individual deficiency basis, however, no special textual material was consistently used. The instructors were free to improvise as they felt it necessary. The only requirement imposed on them was that they record those instructional areas considered by their groups. Each instructor completed each week a report of the activities of his group. It is those weekly summaries that are reproduced here.

The Remedial English Curriculum

Text: English 2600 by J. C. Blumenthal. New York: Harcourt, Brace, and World, Inc., 1962.

A topical listing, organized on a weekly basis, of the remedial English instructional curriculum is as follows:

First Week

1. Writing the descriptive paragraph: the topic sentence, including subject and attitude, narrowed to a specific time and place. Paragraph unity and adequate development were stressed as was the concept of arriving at specific and concrete details.
2. A review of grammar was begun using English 2600. Each student began where his pre-test information indicated a lack of full mastery.

3. Correction of specific mechanical errors in the student's own written work.

Second Week

1. Work on paragraph writing, begun the first week, was continued and enriched, stressing the concepts of unity and adequate development.
2. Additional concepts in writing skills introduced were:
 - a. The use of the detailed narrative or descriptive example to illustrate an abstract idea.
 - b. The use of a list of many examples to prove a general idea.
 - c. The necessity of detailed planning before writing.
3. Students continued to work on grammar and mechanical errors.

Third Week

1. Paragraph writing continued to be stressed, emphasizing these concepts: time, place, climax, and logic.
2. The use of linking words and expression was introduced.
3. Repetition of key words through the devices of

"same word," synonyms, and pronouns was discussed.

4. Work continued on grammar and mechanical errors.

Fourth Week

1. Students continued their study of coherence in a paragraph. The following were stressed:
 - a. The use of the order of importance (climax).
 - b. The use of linking words and expressions.
 - c. Comparison and contrast as a basis for order, using point-to-point comparison within one paragraph and the balanced sentence.
2. Continued study of grammar and the mechanics of writing, as needed.

Fifth Week

1. Comparison and contrast as a basis for order were stressed, using as examples the point-to-point comparison in a single paragraph and comparison in a pair of linked parallel paragraphs.
2. The use of outlining as a means of analyzing a published essay and outlining as a technique for planning before writing was introduced.
3. Continued study of grammar and the mechanics of writing.

Sixth Week

1. Instruction stressed:
 - a. The use of clincher and/or topic sentences as paragraph transitions.
 - b. The use of descriptive (spatial) order in an essay.
 - c. The use of narrative (chronological) order in the essay.
 - d. The use of the balanced sentence for point-to-point comparison and contrast in the isolated paragraph.

Seventh Week

1. Instruction stressed:
 - a. Organizing and writing the essay of arguments and reasons.
 - b. Review.

The Remedial Reading Curriculum

A topical listing, organized on a weekly basis, of the remedial reading instructional curriculum is as follows:

First Week

1. A presentation of the general structure of the course.

2. Instruction in previewing a textbook.
3. Discussion and assignment of recreational reading for the summer session.
4. Flexibility pre-test (speed and comprehension on easy and difficult materials).
5. Administration of a pre-test on skimming a page for general significance and an evaluation of difficulty. Instruction in same.
6. Sentence meaning pre-test.
7. Discussion of the nature of vocabulary growth. Assignment of an individual word collection and textbook vocabulary list.
8. Diagnostic test (Word Attack) administered including sub-tests on pronunciation, use of context and structural clues, and proper use of the dictionary.
9. Pacing exercises were used to improve reading speed.
10. Introduction of context clues for meaning.

Second Week

1. Introduction of the concept of flexibility in reading rate. Each enrollee made and recorded throughout the summer a graph of reading speed and flexibility.
2. Introduction in types of context clues to word meaning were discussed.

3. Instruction in sentence (general v. specific) meaning.
4. Instruction in the use of syllabication and sound in word attack.
5. Demonstration of the relationship of eye movement to rapid reading (peephole test, eye-open check).

Third Week

1. Instruction in the efficient use of the dictionary including:
 - a. Spelling, pronunciation, and choice of definition.
 - b. Inflected endings, etymology.
 - c. Principal parts, plurals, and dictionary abbreviations.
2. Instruction in the translation of difficult sentences.
3. Demonstration of the Eye-Span Trainer for individual use.
4. Eye-rhythm exercises.
5. Review of the techniques for reviewing a textbook.
6. A diagnostic test on "main ideas and relationships" was administered.
7. Paragraph study was introduced.

Fourth Week

1. Continued work in expressing the main idea in a paragraph.
2. Introduction and student use of an individualized program in reading comprehension.
3. Study techniques instruction: how to deal with a "chapter assignment."
4. Introduction of the topic sentence approach to paragraph meaning.
5. Administration of a pre-test on written recall (summarizing).
6. Review of individual vocabulary collections.
7. Student use of the reading accelerator.

Fifth Week

1. Discussion of the SQ3R and other formulas for improving student study habits.
2. Exercises in thought phrasing with emphasis on eye-mind teamwork.
3. Explication of the function of subordinate sentences in a paragraph.
4. Class evaluation of the written recall pre-test administered the previous week.
5. Study techniques instruction: tips for better concentration.

6. Instruction in and drill on the use of punctuation marks as an aid to comprehension.
7. A brief review of the proper use of library facilities.

Seventh Week

1. Instruction and drill on reading with key words.
2. Final check on individual vocabulary collections.
3. Quiz on previewing a short article.
4. Final check on the student vocabulary list.
5. Introduction of and practice in the structural analysis of words (prefixes, roots, suffixes).
6. Final speed and comprehension test.
7. Evaluation of student records on "flexibility of rate" to determine progress during the summer.
8. Final examination covering the concepts of reading efficiency introduced over the summer period.
9. Review of recreational reading completed by the enrollees throughout the summer.

The Remedial Mathematics Curriculum

A topical listing, organized on a weekly basis, of the remedial mathematics instructional curricula is as follows:

First Week

1. Addition, subtraction, multiplication, and division of positive and negative numbers.
2. Discussion of a theory of numbers including conversion from base ten to any number base and vice versa.

Second Week

1. Elementary algebraic definitions and principles.
2. The mathematics of rational numbers.
3. Solution of first-degree equations.

Third Week

1. Solution of first-degree equations.
2. Solution of problems involving first-degree equations.
3. Solution of fractional equations.
4. Solution of problems involving fractional equations.
5. Discussion of the theory of decimals.
6. Introduction to the study of exponents.

Fourth Week

1. Solution of first-degree equations and problems involving them continued.
2. Fundamental operations with monomials.

3. The law of exponents was discussed.

Fifth Week

1. Solution of first-degree equations.
2. Solution of verbal problems.
3. Multiplication, division, addition, and subtraction of fractions.

Sixth Week

1. Discussed the theory of exponents including exponent zero, the negative exponent, and the fractional exponent.
2. Discussion of the arithmetic square root.
3. Factoring.

Seventh Week

1. Solution of verbal problems.
2. Solution of fractional problems.
3. Solution of quadratic equations.
4. Solution of equations with two unknowns.
5. Introduction of the theory of straight-line graphs.

Summary

This chapter has described the remedial sequence used in this research. One section includes a description

of the program's organization and a statement of its instructional goals; the other, an outline of the instructional content of the three (English, Reading, Mathematics) remedial courses.

Chapter IV will contain an analysis of the data collected with its attendant findings.

CHAPTER IV

ANALYSIS OF DATA AND FINDINGS

The data collected for analysis in this chapter came from the pre- and post-test scores of the battery of tests, described in Chapter II, selected for use in this study.

All subjects were administered all tests in the battery under pre-determined, controlled conditions. Before a test battery was administered to the subjects, the pertinent test manual was consulted for its recommended testing procedure. These recommendations were consistently followed.

Also, the First Semester Grade Point Average (GPA) was computed for each of the subjects who completed the experiment.

The data were analyzed by employing three statistical procedures (see Chapter II). These procedures were intended to provide a basis for judgment concerning these questions:

1. Was the summer remedial sequence effective in producing academic growth on the part of the subjects?
2. Did the personal-vocational counseling treatment have a positive effect on the post-test scores?

3. Were the counseled subjects as a group significantly more successful at the completion of the first semester at the community college than were the non-counseled subjects?

Results of the Analysis of Data

1. Was the summer remedial sequence effective in producing academic growth on the part of the subjects?

A paired-t procedure (1: 165-166) was used to evaluate this proposition. Its computational formula is:

$$t_p = \frac{\bar{d}}{s_d \sqrt{n}}$$

where...n = 33.

Therefore... $t_p = 2.036$, $\alpha = 0.05$.

This test of significance (2) was computed for each sub-test in the battery using the individual difference between the mean pre-test scores and the mean post-test scores of each sub-test as the criteria; i.e., \bar{d} (see Table 1). It was found that after the remediation treatment the mean difference between the pre- and post-test scores was significant at the 0.05 level on these tests:

a. The Lorge-Thorndike Test of Intelligence

(1) Verbal...where $t_p = 3.07$.

(2) Non-verbal...where $t_p = 2.92$.

(3) Total...where $t_p = 3.72$.

TABLE 1

PAIRED-t TEST OF SIGNIFICANCE OF THE MEAN DIFFERENCE
BETWEEN PRE-REMEDIATION TEST SCORES AND POST-
REMEDIATION TEST SCORES TO DETERMINE
GROWTH DUE TO REMEDIATION SEQUENCE

Test	\bar{d}^*	s_d	t_p	Level of Signifi- cance
<u>Iowa Test of Educational Development</u>				
Background--Social Studies	-1.03	4.56	-1.30	N/S
Background--Natural Science	-0.66	3.66	-1.04	N/S
Correctness of Expression	0.81	3.98	1.17	N/S
Quantitative Expression	0.97	3.60	1.56	N/S
Reading--Social Studies	1.45	5.49	1.51	N/S
Reading--Natural Science	1.09	4.83	1.29	N/S
Reading--Literature	0.91	5.25	0.99	N/S
General Vocabulary	-0.26	2.77	0.54	N/S
Use of Sources	0.38	4.90	0.45	N/S
Composite	0.45	1.96	1.32	N/S
<u>Lorge-Thorndike Test of Intelligence</u>				
Verbal	2.40	4.50	3.07	.05
Non-Verbal	2.82	5.54	2.92	.05
Total	2.25	3.47	3.72	.05
<u>Sequential Test of Educa- tional Progress</u>				
Listening	0.46	6.36	0.41	N/S

TABLE 1--Continued

Test	\bar{d}^*	s_d	t_p	Level of Significance
<u>Davis Reading Test</u>				
Level of Comprehension	4.02	6.78	3.38	.05
Speed	2.48	6.44	2.21	.05
<u>Scholastic Aptitude Test</u>				
Verbal	2.29	5.83	2.25	.05
Mathematics	.09	4.69	0.11	N/S

*All scores derived from a T-Score Conversion.

b. The Davis Reading Test

(1) Level of Comprehension...where $t_p = 3.38$,
and

(2) Speed...where $t_p = 2.21$.

c. The Scholastic Aptitude Test

(1) Verbal...where $t_p = 2.25$.

The pre-test, post-test design employed in this research necessitated the readministration of all tests in the battery, albeit using alternate forms, after a three-month lapse period. All tests in the battery are customarily used in the manner in which they were herein applied.

As the results of the tests of significance on the Iowa Test of Educational Development sub-tests demonstrate,

there was no indication that significant positive growth was attributable to the remediation sequence. In the case of the "Background-Social Sciences" ($t_p = -1.30$) and "Background-Natural Sciences" ($t_p = -1.04$) sub-tests, this could have been caused by the fact that these areas received no instructional attention during the summer session. The "Quantitative Expression" sub-test post-scores, which most nearly approached the pre-determined level of significance ($t_p = 1.56$), did not increase significantly after that area had received rather substantial instructional emphasis. This observation would also apply to the "Correctness of Expression" ($t_p = 1.17$), "General Vocabulary" ($t_p = 0.54$), and the three reading sub-tests ($t_p = 1.51$; $t_p = 1.29$; $t_p = 0.99$) of the battery for, although they approached significance, they did not meet the pre-determined 0.05 level of significance criterion. The "Use of Sources" sub-test content received only incidental attention during the summer and could not have reasonably been expected to yield significant results ($t_p = 0.45$). The "Composite" score, a weighted score based entirely on the yields of the other nine sub-test scores, could not have been significant if none of the nine scores from which it was derived was significant.

Worthy of note is that all significant results (except the Lorge-Thorndike non-verbal sub-test) were in the verbal facility category. All indications are that the

language arts instruction (especially the remedial reading) was an agent of growth and that it had a carry-over effect on post-test intelligence, scholastic aptitude, and reading test scores.

2. Did the personal-vocational counseling treatment have a positive effect on the post-test scores?

Because of the relatively small sample size ($n = 33$), it was decided that a check on the random assignment of subjects to the counseling-no counseling dichotomy would be in order. For this purpose, an analysis of variance for unequal subclass (3: 102-111) was computed, using each of the pre-remediation treatment scores on each of the battery sub-tests to determine whether or not these two groups were, at the onset of the experimental process, significantly different (see Appendix I). No significant differences existed between the experimental (X_1, X_2) and the control (X_1) groups except such differences as could be expected by chance.

A second analysis of variance for unequal subclass (3: 102-111) was computed, using a CDC 3600 computer program (4), between the experimental (X_1, X_2) and control (X_1) group post-test scores to determine if the personal-vocational counseling treatment (X_1, X_2) had a positive effect on the post-remediation test scores for its recipients (see Table 2).

TABLE 2

ANALYSIS OF VARIANCE (UNEQUAL SUBCLASS) BETWEEN COUNSELED SUBJECTS' AND NON-COUNSELED SUBJECTS' POST-REMEDICATION TEST SCORES TO DETERMINE THE EFFECTS OF THE PERSONAL-VOCATIONAL COUNSELING TREATMENT ON POST-TEST SCORES

Post-Test	F-Test	d
<u>Large-Thorndike Test of Intelligence</u>		
Verbal	3.219	N/S
Non-Verbal	1.411	N/S
Total	3.238	N/S
<u>Iowa Test of Educational Development</u>		
Background--Social Studies	0.434	N/S
Background--Natural Science	0.053	N/S
Correctness of Expression	1.099	N/S
Quantitative Thinking	0.764	N/S
Reading--Social Studies	0.837	N/S
Reading--Natural Science	0.617	N/S
Reading--Literature	1.278	N/S
General Vocabulary	3.579	N/S
Composite	1.340	N/S
Use of Sources	0.077	N/S
<u>Sequential Test of Educational Progress</u>		
Listening	0.145	N/S

TABLE 2--Continued

Post-Test	F-Test	d
<u>The Davis Reading Test</u>		
Comprehension	0.937	N/S
Speed	0.106	N/S
<u>The Edwards Personal Preference Schedule</u>		
Achievement	2.642	N/S
Deference	0.008	N/S
Order	0.142	N/S
Exhibition	1.413	N/S
Autonomy	0.912	N/S
Affiliation	1.989	N/S
Intracception	0.520	N/S
Succorance	0.793	N/S
Dominance	0.005	N/S
Abasement	1.825	N/S
Nurturance	3.998	N/S
Change	0.159	N/S
Endurance	1.172	N/S
Heterosexuality	3.037	N/S
Aggression	0.794	N/S
Consistency	2.769	N/S
<u>The Scholastic Aptitude Test</u>		
Verbal	1.014	N/S
Mathematics	2.571	N/S

Where... $n \quad (X_1, X_2) \quad = \quad 16$ and
 $n \quad (X_1) \quad = \quad 17,$
 $F \quad \sqrt{1}, \sqrt{31} \quad = \quad 4.159, \alpha = 0.05.$

It was found that significant differences, at the 0.05 level, do not exist between the experimental (X_1, X_2) and the control (X_1) group except as may be expected to occur by chance. Therefore, the counseled students as a group did not fare better as a group than did those who received no counseling in the seven-week period of the summer remedial program. It is worthy of note that the personal-vocational counseling treatment did have a tendency toward significance, which may be all that can be expected from such a short-term exposure.

3. Were the counseled subjects as a group significantly more successful as measured by Grade Point Average at the completion of the first semester at the community college than were the non-counseled subjects?

In that pre-treatment equality of the counseled (X_1, X_2) and the control (X_1) groups had been previously established (see Appendix I), a t-test procedure (5: 270) was used to test for the significance of the difference between the mean First Semester Grade Point Average (\bar{X}_1) of the counseled group (X_1, X_2) and the mean First Semester Grade Point Average (\bar{X}_2) of the control group. The computational formula is:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sigma \sqrt{\frac{1}{N_1} + \frac{1}{N_2}}}$$

where...
$$\sigma = \sqrt{\frac{n_1 s_1^2 + n_2 s_2^2}{N_1 + N_2 - 2}}$$

and... $n_1 = 16, \bar{X}_1 = 1.49, \sigma_1 = 1.02$

and... $n_2 = 17, \bar{X}_2 = 1.13, \sigma_2 = 0.214.$

Therefore... $t = 1.3138.$

The $t = 1.3138$ was not significant at the pre-determined 0.05 level. It was concluded that the counseling treatment did not allow its recipients to be significantly more successful as a group at the completion of the first semester, using First Semester Grade Point Average as the success criterion, than the control group. Again, it is worth noting that the counseling treatment did have a tendency to approach significance after the short-term summer exposure.

Summary

This chapter contains an analysis of the data collected in this research with the attendant findings. Appropriate statistical procedures were utilized as a means of answering these pertinent questions:

1. Was the summer remedial sequence effective in producing academic growth on the part of the subjects?

2. Did the personal-vocational counseling treatment have a positive effect on the post-test scores?
3. Were the counseled subjects as a group significantly more successful at the completion of the first semester at the community college than were the non-counseled subjects?

It was found that, based on statistical evidence, the summer remedial sequence was a responsible growth factor in the verbal facility of the subjects. This was probably due to the language arts (especially the remedial reading) instruction given during the seven-week summer session. Further, it was found that the personal-vocational counseling treatment was not a significant factor in either the academic growth of its recipients at the conclusion of the summer remedial sequence or at the conclusion of their first semester at the community college. In both instances, however, it was noted that there was a tendency for the personal-vocational counseling treatment to approach significance.

The final chapter will discuss these conclusions and their implications.

Notes to Chapter IV

1. Mode, E. B. Elements of Statistics. Englewood-Cliffs, N.J.: Prentice-Hall, Inc., 1961.
2. Although it was originally intended that forty subjects would be used in this study, twenty in each of the two experimental groups, after the initial selection procedure and random assignment to the counseling (X_1, X_2) treatment four subjects failed to complete the pre-test battery and had to be disqualified on that basis. Of the thirty-six subjects that did complete the pre- and post-test battery and the seven-week summer session, two did not enroll in the fall semester and one dropped after three weeks. They, too, had to be disqualified. The thirty-three remaining subjects are divided into the two treatment groups in the following manner: sixteen in the remediation-counseling experimental group (X_1, X_2) and seventeen in the remediation (X_1) experimental group.
3. Myers, Jerome L. Fundamentals of Experimental Design. Boston: Allyn and Bacon, 1966.
4. "Analysis of Variance for Unequal Sub-Class," Research Computing Center, University of Massachusetts, Amherst: 1966.
5. Freund, John E. Modern Elementary Statistics. Englewood-Cliffs, N.J.: Prentice-Hall, Inc., 1964.

CHAPTER V

SUMMARY, CONCLUSIONS, AND DISCUSSION

This study has dealt with an examination of the effects of remediation and counseling on a selected sample of subjects. All of the thirty-three subjects in the study were classified as non-admissible applicants to a public, two-year, community college in western Massachusetts. They had, after graduation from a public high school, failed to obtain requisite scores on college success prediction tests (scholastic aptitude, achievement), ranked low in their graduating class, and had not received positive teacher/counselor recommendations. All subjects voluntarily enrolled in a seven-week summer sequence. They were guaranteed admission to the junior college as full-time, non-probationary students for the fall semester, subject only to their being in reasonable daily attendance throughout the summer program. After the subjects were identified but before the summer sequence began, one-half were selected at random for inclusion in the personal-vocational counseling treatment. All subjects were administered a pre-test battery which included tests of intelligence, personality, educational development, scholastic aptitude, and listening and reading skills.

Throughout the summer session the subjects attended daily one-hour remedial classes in English, reading, and mathematics. The curriculum for each of these subject areas was pre-planned by the investigator and the instructors. Classes were small. A student-teacher ratio of 12:1 was maintained. No grades, marks, or other kinds of traditional evaluation were used. Emphasis was placed on student-teacher interaction, student-student interaction, and student self-evaluation. Those subjects selected for inclusion in the personal-vocational counseling treatment group met with the counselor for five, one-half-hour sessions on a regularly scheduled basis throughout the seven-week period.

At the completion of the summer remedial sequence, the post-test battery was administered. It consisted of the same tests as were used in the pre-treatment battery. A pre-treatment test, post-treatment test evaluative design was employed to determine whether or not the treatments (remediation and counseling) had a positive effect on the academic growth of the recipients of those treatments during the summer.

The thirty-three subjects (sixteen in the remediation-counseling group; seventeen in the remediation group) entered the fall semester as full-time, non-probationary students at the junior college. This investigator maintained contact with the junior college to determine the academic

status of the subjects at the completion of the first semester. At that time the first semester grade-point average was computed for each subject. A t-test of significance was computed between the mean grade-point average of the counseled group and the mean grade-point average of the non-counseled group to determine whether or not the counseled subjects were significantly more successful at the completion of the first semester than were the non-counseled subjects.

Conclusions

The first question under investigation in this thesis was: Was the summer remedial sequence effective in producing academic growth on the part of the subjects? The results of the paired-t test of significance procedure utilized on individual pre-treatment test and post-treatment test scores to evaluate this question showed no significant growth at the 0.05 level on any of the nine sub-tests of the Iowa Test of Educational Development. These sub-tests included measures appropriate to the determination of growth in these areas: "Background--Social Studies," "Background--Natural Science," "Correctness of Expression," "Quantitative Expression," "Reading--Social Studies," "Reading--Natural Science," "Reading--Literature," "General Vocabulary," "Use of Sources," and a weighted "Composite" score.

Because only incidental remedial instruction was given in the areas measured by the "Background--Social Studies," "Background--Natural Science," and the "Use of Sources" sub-tests, it was considered not unusual that the test of significance did not indicate positive post-treatment results. The "Quantitative Expression" significance score was the primary test of the effects of the remedial mathematics curriculum. Even though that score most nearly approached significance, it did not equal or surpass the pre-determined 0.05 level. It must, therefore, be concluded that, after remedial mathematics had received rather substantial emphasis in the summer program, the subjects' skill in mathematics was not appreciably increased by their involvement in those classes. This observation is also applicable to the "Correctness of Expression," "General Vocabulary," and the three reading comprehension sub-test significance scores of the battery for, although they approached significance, they did not meet the pre-determined 0.05 level of significance criteria. The subjects' skills, as measured by these five sub-tests, showed no appreciable increase after the remedial treatment.

The following tests in the battery exceeded the 0.05 level of significance on the paired-t computation after the remediation treatment:

1. The Lorge-Thorndike Test of Intelligence

- a. Verbal sub-test
 - b. Non-verbal sub-test
 - c. Total
- 2. The Davis Reading Test
 - a. Level of Comprehension sub-test
 - b. Speed sub-test
 - 3. The Scholastic Aptitude Test
 - a. Verbal sub-test

All significant results (except the Lorge-Thorndike Non-Verbal sub-test) were in the verbal facility category. The remedial language arts instruction, especially the remedial reading instruction, is considered to be a major related factor in the manifestation of significantly different positive post-treatment scores. Each of the sub-tests (except the Lorge-Thorndike Non-Verbal sub-test) presupposes an ability to use and understand the English language as well as skill at reading with comprehension, accuracy, and speed. One may conclude that the significant post-treatment test results came about, then, not as a result of the subjects' growth in intelligence and scholastic aptitude, but because the subjects acquired more skill at language arts and reading during the summer remedial sequence. This increase in skill allowed the subjects to manifest more accurately their acquired abilities on the verbal tests. This conclusion would seem consistent with all battery

post-treatment results because, although the pertinent subtests of the Iowa Test of Educational Development ("Correctness of Expression," "Reading--Social Studies," "Reading--Natural Science," "Reading--Literature," and "General Vocabulary") did not surpass the pre-determined 0.05 level of significance, they all evidenced a tendency toward significance.

The second question under investigation was: Did the personal-vocational counseling treatment have a positive effect on the post-treatment test scores? After the pre-treatment equality of the experimental (counseled) group and the control group was established, the results of an analysis of variance (unequal subclass), computed between the experimental and control groups' post-treatment test scores, utilized to evaluate this question showed no significant differences at the 0.05 level on any of the battery subtests. It can be concluded that the personal-vocational counseling treatment did not have a positive effect on the post-treatment test scores. The counseled group, in this respect, did not fare better than those subjects who did not receive counseling. The personal-vocational counseling treatment did show a tendency toward significance, which may be all that could be expected from such a short-term exposure.

The third question under investigation in this

thesis was: Were the counseled subjects as a group significantly more successful as measured by grade-point average at the completion of the first semester at the community college than were the non-counseled subjects? The results of a t-test of significance between the mean first semester grade-point average of the counseled group and the mean first-semester grade-point average of the control group showed no significant difference at the 0.05 level. The recipients of the counseling treatment as a group did not receive significantly higher first-semester grade-point averages as a group than did the control group. The counseling treatment did evidence a tendency toward significance.

Discussion

Conclusions reached as a result of this analysis are limited in many respects to the public junior college in western Massachusetts in which this investigation was conducted. Inferences made as a result of the data reported here would, therefore, be most accurately applied to that institution. It can be reported that the particular junior college selected as the setting for this study was typical of similar institutions in the geographic area. All area public junior colleges do, or will, serve a group of students similar to those represented in the sample. The treatments (remediation and counseling) introduced are also

a recognized function of the junior colleges, albeit not yet sufficiently attended to at the majority of these institutions.

At the conclusion of the follow-up period of this study, a check was made to determine whether or not those junior college faculty who came in classroom contact with the subjects could identify them. Out of a possible 406 contact identifications (thirty-three subjects X twelve involved instructors), only five positive identifications occurred. It would seem reasonable to conclude, then, that there was negligible instructor awareness of the subjects being different from the student-in-general at the college.

Even though the counseling variable was not determined to be significant statistically, it did tend toward significance in the one semester follow-up period. It is thought that any replication of this study would increase chances for success if the time spent in counseling were to be increased from the two-and-one-half-hour period to a five-hour period. It was observed that the allotted period did not allow for the depth of counselor-counselee interaction necessary to effect significant positive results in all cases. There was a feeling on the part of the counselor that those counselees able to engage in the counseling dialogue most successfully in the time period available were those who were most successful at the conclusion of the

experimental period. The opposite was also true in some respects. Although some subjects may never have become acclimated to the counseling sessions, several counselees were observed near the point of entering into a significant relationship with the counselor. Additional time may have allowed that to happen.

A remedial program of the type used in this study should seriously consider a more basic mathematics curriculum. The study sequence used here was initially conceived as remediation in preparation for college mathematics. A minority of the subjects (ten students) elected a college mathematics course during the fall semester. All others chose a curriculum in which higher mathematics (algebra, geometry, trigonometry, and calculus) played only a minor role. It is suggested that the remedial mathematics would have been of greater value to the subjects had more emphasis been placed on basic quantitative skills.

With reference to the previously cited literature dealing with similar populations concerning "false negative" collegiate success prediction (see Chapter I, "Analogous Research Studies," p. 14), it is estimated that between 10 per cent (Childers) and 11 per cent (Campbell) of those applicants denied entrance to college because of low success prediction would, if allowed to enter college, be successful without any specialized treatment. College admissions

personnel are generally aware of the inefficiency of prediction schemes in this respect but, because of the press, have had to decide in favor of the many successful aspirants to the detriment of the "false negatives." On the basis of the Childers and the Campbell data, one could assume that 10 per cent to 11 per cent of the subjects in this investigation would be successful simply by entering them in college. Sixty-two per cent of the subjects of this study successfully completed the first semester. At the conclusion of two consecutive semesters, 42 per cent were successful. This increase in the success rate over what could be expected to occur (10 to 11 per cent) because of "false negatives" in the sub-population sample could have been explained by "treatments" (remediation and counseling).

A significant implication of this study has been a reenforcement of the idea that traditional college success predictors (the Scholastic Aptitude Test, rank-in-class, and teacher/counselor recommendations) cannot be used effectively (nor are they intended for that use) to select high school graduates like those who were successful at their collegiate goal attainment in this study. A fruitful area for future research would be an attempt to design a prediction-selection study which would aid junior college admissions personnel in the identification of students like those who were successful in this investigation.

In concluding this section, two observations from the manpower point of view should be mentioned. First, an informal follow-up of the subjects' success at the junior college conducted at the completion of two consecutive semesters revealed that the experimental group dropout rate was 52 per cent. A report issued by the admissions dean at the junior college, covering the same period, showed that the freshman class dropout rate was 38 per cent. Even though the experimental group dropout rate was perceptibly greater than the freshman class dropout rate, it does suggest that more can be done by the junior college with an anticipated reasonable rate of return than is presently the case in many of these institutions. Secondly, based on actual cost of facilities, instructional staff, testing, and administration, the per pupil expenditure for this study was approximately \$242.00. This is a rather low-cost investment for society to make if one considers the contribution that even one successful subject might make to it.

Final Statement

This thesis was undertaken as an attempt to determine whether or not remediation and counseling could be judged to be significant, positive intervening variables in the collegiate goal attainment of subjects classified as non-admissible applicants to a public junior college. All

thirty-three subjects received remedial instruction in English, reading, and mathematics during a seven-week summer program. Half of the group was randomly selected for personal-vocational counseling on a regularly scheduled basis. A pre-treatment test, post-treatment test design was utilized to evaluate these two questions: (1) Was the summer remedial sequence effective in producing academic growth on the part of the subjects? and (2) Did the personal-vocational counseling treatment have a positive effect on the post-treatment test scores? Statistical evidence indicates that the answer to both questions was "No." Test of significance scores did not equal or exceed the 0.05 level on any of the pertinent sub-tests of the battery. Significant results were, however, reported for the intelligence, scholastic aptitude, and reading sub-tests of the battery. It was concluded that, because the subjects obtained more skill at language arts and reading during the summer remedial program, they were able to manifest more accurately their acquired abilities on the verbal tests. Even though the personal-vocational counseling variable was not determined to be statistically significant, it did evidence a tendency toward significance at the conclusion of the seven-week period.

A third question asked in this thesis was: Were the counseled subjects as a group significantly more

successful as measured by grade-point average at the completion of the first semester at the community college than were the non-counseled students? The results of a t-test between the mean grade-point averages of the counseled and the control groups indicate that counseling had a non-significant effect on grade-point average at the conclusion of the first semester. It was reported that the counseling treatment did evidence a tendency toward significance.

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APPENDIX I

ANALYSIS OF VARIANCE (UNEQUAL SUBCLASS) ON PRE-REMEDICATION
TEST SCORES TO DETERMINE PRE-TREATMENT EQUALITY OF
EXPERIMENTAL AND CONTROL GROUPS

Pre-Test	F-Test	
<u>Large-Thorndike Test of Intelligence</u>		
Verbal	4.134	N/S
Non-Verbal	0.637	N/S
Total	3.291	N/S
<u>Iowa Test of Educational Development</u>		
Background--Social Studies	0.094	N/S
Background--Natural Science	1.154	N/S
Correctness of Expression	0.484	N/S
Quantitative Thinking	0.337	N/S
Reading--Social Studies	0.767	N/S
Reading--Natural Science	1.401	N/S
Reading--Literature	0.410	N/S
General Vocabulary	1.646	N/S
Composite	0.881	N/S
Use of Sources	0.167	N/S
<u>Sequential Test of Educational Progress</u>		
Listening	0.753	N/S
<u>The Davis Reading Test</u>		
Comprehension	0.025	N/S
Speed	0.790	N/S

APPENDIX I--Continued

Pre-Test	F-Test	q
<u>The Edwards Personal Preference Schedule</u>		
Achievement	0.085	N/S
Deference	2.128	N/S
Order	2.168	N/S
Exhibition	2.801	N/S
Autonomy	0.473	N/S
Affiliation	0.104	N/S
Intracception	0.937	N/S
Succorance	1.393	N/S
Dominance	0.223	N/S
Abasement	1.135	N/S
Nurturance	5.448	.05
Change	1.010	N/S
Endurance	0.402	N/S
Heterosexuality	0.567	N/S
Aggression	1.100	N/S
Consistency	0.116	N/S
<u>The Scholastic Aptitude Test</u>		
Verbal	0.179	N/S
Mathematics	0.004	N/S

Where... n_1 (counseling) = 16 and n_2 (no counseling) = 17
 and ... $F_{\gamma=1, \gamma=31} = 4.159$, $q = 0.05$.

